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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,516	09/13/2001	Matthew Sommers	GLO 2 0078	2609

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EXAMINER	
SAWHNEY, HARGOBIND S	
ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,516	SOMMERS ET AL.	
	Examiner	Art Unit	
	Hargobind S Sawhney	2875	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,12-14 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12-14 and 16-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The amendment filed on April 5, 2004 has been entered. Accordingly:

- Claims 1,12,16 and 17 have been amended; and
- Claims 10,11 and 15 have been cancelled.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13 and 14 each is dependent on the cancelled Claim 11.

The instant application has been examined considering each of claims 13 and 14 being dependent on the independent Claim 12.

Allowable Subject Matter

4. The indicated allowability of claim 17 is withdrawn in view of further consideration, and the following newly discovered reference(s) Osawa (U.S. Patent No.

5,890,790) and Schoniger et al. (U.S. Patent No. 5,027,258). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 16,18 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Tarne et al. (US Patent No.: 6,443,582 B1).

Regarding claims 16, 18 and 19, Tarne et al. (582 B1) discloses a lighting apparatus (Figures 5 and 6, column 3, lines 61 and 62) comprising:

- a light emissive wave guide 66 including a curved textured bottom surface 65 (Figures 5 and 6, column 3, lines 61 and 62);
- the light wave guide 66 further having its perimeter thicker than its center portion (Figures 5 and 6);

- a plurality of light producing element 16 positioned around the perimeter of light emissive elements 16 (Figure 6, column 4, lines 16 and 17);
- the light producing element 16 emitting light substantially along the axis orthogonal to the light emissive wave guide 66 (Figures 5 and 6);
- the textured surface 65 forming a symbol – a plurality of concentric "Os" – Figures 5 and 6; and
- the textured surface including a plurality of microstructures 43 and 46 arranged in a pattern on an interior side of the light emissive wave guide (Figure 7).

7. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Tokunaga (US Patent No.: 5,375,043).

Tokunaga ('043) discloses a lighting apparatus (Figures 1 and 2, column 2, lines 20 and 21) comprising:

- a light emissive wave guide 1 including a textured bottom surface 1a (Figures 1 and 2, column 2, lines 21-30);
- a plurality of light producing elements 2a-2d arranged about the perimeter of the light emissive wave guide 1;
- the light, produced by elements 2a- 2d, interacting with the textured surface 1a, and being emitted by the light wave guide 1 (Figures 1 and 2);
- an encapsulant surrounding each of the light producing elements 2a-2d (Figures 1 and 2, column 2, lines 41-45) and a butting – being molded in one piece from one material- the wave guide; and

- the encapsulant matching – being integral and part of the same material- a refractive index of the light wave guide 1 (Figures 1 and 2).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-3,5,7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Tokunaga (US Patent No.: 5,375,043).

Regarding Claim 1, Tung ('297) discloses a lighting apparatus (Figure 2) comprising:

- a wave guide 40 (Figures 1-4, column) having microstructures 44,45 (Figure 1 and 3, column 3, line 26) arranged on a surface – back surface- (Figure 3, column 3, lines 30-34);
- the microstructures 44,45 interacting with light in a wave-guide 40, and scattering at least a portion of the light out of the wave-guide 40 in a pattern 42 (Figure 3, column 3, lines 18-22);
- the pattern 42 being determined by the arrangement of the microstructures 44,45 (Figure 3, column 3, lines 18-22); and

- a plurality of light emitting diodes (LEDs) 20 coupled to the wave-guide 40 (Figures 1,2 and 4 , column 2, lines 50 and 51), and injecting light into the light guide 40 (Figures 1,2 and 4).

However, Tung ('297) does not teach the plurality of LEDs including a first set of LEDs emitting light having a first color, and a set of LEDs emitting a second color miixing with the first color light in the wave guide to produce a third color light.

On the other hand, Tokunaga ('043) discloses a lighting unit 1 (Figure 1) comprising a plurality of LEDs 2 (Figure 1 and 2) including a first set of LEDs 2a emitting light having a first color, and a set of LEDs 2b emitting a second color mixing with the first color light in the wave guide 1 to produce a third color light (Figure 1,2, column 2, lines 4652 and 61-64; and column 4, lines 25-30).

Thus, regarding Claim 1, it would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) by providing the plurality of LEDs including a first and a second set of LEDs emitting lights of different colors as taught by Tokunaga ('043) for the benefit and advantage of effective display of massages and advertisements.

Regarding claims 2,3 and 7, Tung ('297) in view of Tokunaga ('043) discloses the lighting apparatus further including:

- the pattern 42 further including a letter D (Tung, Figure 3, column 3, lines 18-22);
- the microstructures 44,45 scattering in wide angles (Tung, Figures 3 and 4, column 3, lines 35-44); and

- the plurality of light emitting diodes (LEDs) 20 injecting light into the planer region of the light guide 40 (Tung, Figure 4).

Regarding Claim 5, Tung ('297) teaches a wave-guide made of transparent material such as acrylic material. However, Tung ('297) does not teach the wave-guide having a pre-selected color tint.

On the other hand, Tokunaga ('043) teaches a lighting unit (Figure 1) comprising a wave-guide 1 (Figure 1, column 2, line 21) being either a colorless or colored transparent plate (Figure 1, column 1, lines 55 and 56; and column 3, lines 33-36).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) by providing a tinted (smoked) wave guide as taught by Tokunaga ('043) for the benefit and advantage of imparting the desired light transmission properties and high attention value.

Regarding Claim 9, Tung ('297) in view of Tokunaga ('043) discloses the lighting apparatus further including:

- a refractive index matching material – the portion of the light guide 1 surrounding the LEDs 2a-2d and located between the LEDs 2a-2d and the remaining portion of the light guide 1 (Tokunaga, Figure 2).

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Tokunaga (US Patent No.: 5,375,043) as applied to claim 1 above, and further in view of Lea et al. (US Patent Application Pub. No.: US 20010038539 A1) hereafter referred as Lea.

Tung ('297) discloses a lighting apparatus comprising a light guide including microstructures disposed on its one of the surfaces. However, neither combined nor individual teaching of Tung ('297) and Tokunaga ('043) teaches the surface with microstructures additionally having cladding.

On the other hand, Lea discloses an illuminating device (Figure 1) comprising a light guide 30 (Figure 1, Para. 0024) including cladding comprising a surface coating 36 with cladding material (Figure 1, Para. 0024).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) in view of Tokunaga ('043) by providing the cladding as taught by Lea for the benefit and advantage of providing light reflection efficiency to its highest level.

11. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Tokunaga (US Patent No.: 5,375,043) as applied to claim 1 above, and further in view of Yamana et al. (US Patent No.: 5,418,384).

Regarding Claim 6, dependent on Claim 1; and Claim 8, dependent on Claim 7, of Tung ('297) in view of Tokunaga ('043) teaches a flat- with no tapered or curved surface - wave-guide. However, neither combined nor individual teaching of Tung ('297) and Tokunaga ('043) teaches a wave-guide including a surface having a pre-selected curvature, and the curved surface further bearing microstructure.

Additionally, regarding Claim 8, neither combined nor individual teaching of Tung ('297) and Tokunaga ('043) teaches a wave-guide being tilted with respect to the planar region.

On the other hand, Yamana et al. ('384) discloses a light source device (Figures 7,9 and 11) comprising a wave-guide 11 (Figure 7, column 4, lines 64 and 65) including a surface 12 having a pre-selected curvature (Figures 9 and 11). Further, a portion f7-f9 of the surface 12 bearing microstructures being tilted (Figures 9 and 11, column 6, lines 46-50).

Thus regarding Claims 6 and 8, it would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the wave guide of Tung ('297) in view of Tokunaga ('043) by providing a the wave guide with pre-selected curvature as taught by Yamana et al. ('384) for the benefit and advantage of providing a wave guide imparting uniformly distributed light output throughout the light emitting surface area.

12. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gwo-Juh et al. (US Patent No.: 6,164,791).

As best as understood, regarding Claim 12, Gwo-Juh et al. ('791) discloses an optical wave guide 2 (Figures 3-12) comprising:

- a transparent material – light guide - 2 formed into a shape including a top surface and an arcuate bottom surface (Figures 8 and 12) and at least one side surface optically communicating with a light source 5 (Figures 3,5,8 and 12, column 2, lines 56-58; and column 3, line 18);

- a plurality of microstructures 21 (Figures 3,5,8 and 12, column 2, lines 60 and 61) disposed on the bottom surface;
- the microstructures scattering at least a portion of light injected from the light source 5 (Figures 3,5,8 and 12, column 2, lines 56-61);
- the scattered light forming a pre-selected (Figure 13, column 1, lines 44-49) light output pattern viewable from outside the waveguide 2.

However, Gwo-Juh et al. ('791) teaches the light guide being shaped from a transparent material instead of the light guide being shaped from a translucent material as claimed by the applicant.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Gwo-Juh et al. ('791) by providing translucent light guide well known in the art, including Kuwabara et al. (US Patent No.: 6,508,564 B1), column 5, lines 31-33, for the benefits of providing light guides capable of both reflecting and refracting the incident light from the light source.

Regarding Claim 13, Gwo-Juh et al. ('791) further discloses the microstructure including texture formed on the bottom surface (Figure 5 and 13, column 1,lines 43-48 and column 3, lines 28-30).

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gwo-Juh et al. (US Patent No.: 6,164,791) in view of Lea et al. (US Patent Application Pub. No.: US 20010038539 A1).

As best as understood, Gwo-Juh et al. ('791) discloses an optical wave-guide including microstructures disposed on its bottom surface. However, Gwo-Juh et al. ('791) does not teach the surface with microstructures additionally having cladding.

On the other hand, Lea discloses an illuminating device (Figure 1) comprising a light guide 30 (Figure 1, Para. 0024) including cladding comprising a surface coating 36 with cladding material (Figure 1, Para. 0024).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Gwo-Juh et al. ('791) by providing the cladding as taught by Lea for the benefit and advantage of providing light reflection efficiency to its highest level.

Response to Amendment

14. Applicant's arguments filed on April 5, 2004 with respect to the 35 U.S.C. 103(a) rejections of claims 1,9,12-14,16,18 and 19 have been fully considered but they are not persuasive.

Argument: Gwo-Juh et al. ('791) does not disclose or suggest microstructures selectively arranged to produce a patterned directional light output as recited in Claim 12.

Response: Gwo-Juh et al. ('791) teaches the scattered light forming a pre-selected (Figure 13, column 1, lines 44-49) light output pattern viewable from outside the waveguide 2. The pattern displayed in

Figure 13 is, in fact, one of the pre-selected patterns including designs for different illuminations (Figure 13, column 1, lines 44-49)

Argument: Claims 1-9,16,18 and 19 are distinguishable over Tung ('297) and other references meet the limitations of amended claims.

Response: Applicant's arguments are considered but they are not considered but are moot in view of the new ground(s) of rejections.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Osawa (U.S. Patent No. 5,890,790);

Schoniger et al. (U.S. Patent No. 5,027,258);

Each of the above-indicated prior arts discloses a lighting apparatus comprising some of the claimed features claimed by the applicant.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is on 571-272-2380. The examiner can normally be reached on 6:15 - 2:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 571-272-2378. The fax phone numbers

for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications and 703-872-9319.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number 703-308-2956.

HSS
6/2/2004

THOMAS M. SEMBER
PRIMARY EXAMINER